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ABSTRACT

Three elementary students with moderate to severe intellectual disabilities and aberrant behaviors were taught to initiate and maintain a conversation with nondisabled peers (who were not classmates) utilizing a communication book adaptation. Additionally, all members of their regular education classes were given the information they needed to converse with their classmate with disabilities using the communication book as the medium for the exchange. Educational staff provided opportunities for members of the class to engage in conversations with the student on a regular basis. Results indicated that there was an increase in positive social and task-related interactions between the students with disabilities and their nondisabled classmates. Increases in initiation of comments were accompanied by decreases in the frequency of the occurrence of the inappropriate behaviors that the students with disabilities had been using in the past to elicit attention from and social interaction with their nondisabled classmates. (Contains 24 references.) (Author/JDD)

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THE REGULAR CLASS AS A COMMUNICATION SUPPORT GROUP

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RUNNING HEAD: Regular Class Support

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Abstract

Three elementary students who experienced moderate or severe intellectual disabilities and displayed a variety of aberrant behaviors were taught to initiate and maintain a conversation with nondisabled peers utilizing a communication book adaptation. Additionally, all members of their regular education classes were given the information they needed to converse with their classmate with disabilities using the communication book as the medium for the exchange. Finally, educational staff provided opportunities for members of the class to engage in conversations with the student on a regular basis. The study examined the effect of the development of this communication support group of regular education students on the frequency and quality of their social initiations to their classmate with disabilities. The results indicated that there was an increase in positive social and task-related comments; moreover, increases in initiation of comments were accompanied by decreases in the frequency of the occurrence of the inappropriate behaviors that the students with disabilities had been using in the past to elicit attention from and social interaction with their nondisabled classmates.

The Regular Class as a Communication Support Group

Although the debate continues as to how much time students with severe disabilities should spend in regular education classrooms and elsewhere (see Brown et al., 1991; Sailor, Anderson, Halvorsen, Doering, Filler, & Goetz, 1989), the literature does present a number of strategies developed to facilitate interactions between students with severe disabilities and their nondisabled schoolmates in integrated settings. These strategies include the use of ecological inventories of school activities to identify interaction opportunities (e.g., Graham, Gee, Lee, Beckstead, & Goetz, 1987), the provision of interesting, age-appropriate materials and activities that promote the joint participation of students with and without disabilities (e.g., Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984; Voeltz et al., 1983), the use of nondisabled partners as facilitators in social interactions with disabled schoolmates (e.g., Goldstein & Wickstrom, 1986; Strain & Odom, 1986), and the development of "special friends" (Voeltz et al., 1983) and "circle of friends" (Forest & Lusthaus, 1989) programs. However, with the exception of "circle of friends" programs, interventions to promote social interaction have been developed and evaluated only within the context of traditional models of integration in which students with disabilities are members of a special education class and participate in selected integrated activities for part of the school day. Evaluations have yet to be conducted of the extent to which strategies to promote ongoing social interactions can be implemented effectively when students with disabilities are full time members of regular education classrooms.

Hunt et al. (1990; 1991) have developed a strategy to increase communicative interactions that utilizes a communication book adaptation and conversational turntaking. The effectiveness of this strategy has been demonstrated in both integrated school (Hunt, Alwell, Goetz, & Sailor, 1990) and home settings (Hunt,

Alwell, & Goetz, 1991). These studies have indicated that not only does the strategy provide the student with the means and skills to participate in social interactions with peers and family members outside of instructional settings, but also that socially unacceptable behaviors that the students had been using to elicit attention from and interaction with peers decrease as conversational skills increase (cf., Carr & Durand, 1985; Hunt, Alwell, & Goetz, 1988; Hunt Alwell, & Goetz, 1991; Hunt Alwell & Goetz, in press; Hunt, Alwell, Goetz, & Sailor, 1990). The purpose of the present investigation is to evaluate the extent to which this intervention can produce similar outcomes when the students with disabilities are full time members of regular education classes (cf., Stainback & Stainback, 1990), and their social partners are their nondisabled classmates.

Method

Students

The three participants in the study – Hillary, Eddie, and Sam – experienced moderate or severe intellectual disabilities as judged by a school district psychologist and displayed a variety of aberrant behaviors. The students attended a regular elementary school and were members of a 5th grade, kindergarten, and 3rd grade class, respectively. They received special education support to participate in all aspects of the regular education program (as described by Sailor et al., 1989). The students' educational program included both academic and functional skill objectives with instruction provided in the regular education classroom, general school settings, and the community (for Hillary and Sam).

The students were selected to participate in the study based on the following criteria: (a) they had some speech but did not articulate clearly so their speech was often misunderstood; (b) their language functioning was restricted to simple sentences (minimal use of modifiers and complex structure) and may have included

stereotyped phrases; (c) participants initiated verbal exchanges but did not maintain such interactions beyond two to three turns; and (d) the students exhibited a variety of inappropriate behaviors that classroom and project staff speculated functioned to initiate interactions with nondisabled classmates. The speech and language functioning of each student was evaluated by a qualified speech and language pathologist using the following assessment tools: (a) the Test of Auditory Comprehension of Language (TACL) (Carrow, 1974) to determine ability to comprehend language structures; (b) the Expressive One Word Picture Vocabulary Test (EOWPVT) (Gardner, 1979) which provides information on vocabulary, speech articulation, auditory discrimination, and memory; (c) the Arizona Articulation Proficiency Scale (1970), and (d) an analysis of language samples for a description of the students' use of language in natural communicative contexts. Table 1 presents test scores and other student characteristics.

Insert Table 1 about here

A description and analysis of the socially unacceptable behaviors displayed by the three students is presented in the section entitled "Identification of Inappropriate Social Interaction Behaviors" (p. 7).

Hillary was a 12-year-old girl with Down syndrome and moderate intellectual disabilities. She communicated through speech, sign language, and various nonverbal behaviors including facial expressions, physical contact, and body posturing. She initiated communication with her peers, but due to limited language and poor articulation, communicative exchanges were limited to 1-2 turns. Difficulties with communicative repair were frequent. When a peer or teacher indicated that a message was not understood, Hillary attempted to clarify by

repeating the message or finger spelling, or she simply turned away from the partner. According to the Arizona Articulation Proficiency Scale (1970), her articulatory rating represented a severe deviation from the norm: that is, Hillary's speech "was intelligible only with careful listening."

Eddie was a 6-year-old student with severe intellectual and moderate physical disabilities. He communicated primarily through single words and short phrases, proximity, gestures, and facial expressions. Although Eddie visually followed the actions of peers in his classroom, he seldom initiated communication or responded to initiations from other children. He was able to engage in 1-2 conversational turns with an adult if the partner maintained the flow of the exchange. He was assessed as having a severe articulation deficit according to the Arizona Articulation Proficiency Scale.

Sam was a 9-year-old boy with moderate intellectual disabilities. He exhibited self-stimulatory and ritualized behaviors and appeared to experience discomfort when routines of the day were interrupted. Although his expressive speech was only 1 year, 6 months below age level (according to assessment with the EOWPVT), he seldom initiated or engaged in sustained interactions with peers. Sam was able to engage in as many as four conversational turns with an adult when the partner facilitated the interaction with questions or statements. According to the Arizona Articulation Proficiency Scale, Sam displayed a severe articulation deficit and his speech "was intelligible only with careful listening."

Conversation Partners

Conversation partners for instructional sessions were nondisabled peers who were *not* members of a disabled participant's regular education classroom. Students were asked to serve as partners during training sessions who demonstrated an

interest in interacting with schoolmates who were disabled, or they were 6th grade students who volunteered to serve as tutors.

All members of the disabled participants' regular education classes were potential communication partners for "facilitated conversational opportunities" (described on p. 12) or during the 15-minute probe sessions that occurred in the regular education classroom.

Setting

Conversation training sessions were implemented in a variety of school settings including the special education resource room used for integrated activities, on the playground during recess, or in the cafeteria at the end of the lunch period. No instruction was delivered in the students' regular education classrooms. The instructor throughout all phases was the integration support teacher who was frequently present in the general education classroom for other educational activities.

"Facilitated conversation opportunities" (described on p. 12) occurred in any school setting which provided a natural opportunity for conversation, including the regular education classroom.

Fifteen-minute probes, designed to measure increases in positive communicative interactions, occurred in the students' regular education classrooms during "free time" periods.

Identification of Inappropriate Social Interaction Behaviors

Functional assessment activities were descriptive in nature, allowing identification of behaviors that were hypothesized to serve primarily a social interaction function. It was hypothesized that the occurrence of this group of behaviors would decrease as the students' ability to engage in social interaction

through conversation turntaking increased. While instruments have been developed to analyze the communicative functions of the excess behaviors displayed by the students (e.g., Durand, 1990), the procedures used were derived from the model identified by Donnellan, Mirenda, Mesaros, and Fassbender (1986) and applied by Hunt et al. (1988; 1990).

Project staff observed each student for several hours (7:50 for Hillary, 3:40 for Eddie, and 7:35 for Sam) across a variety of settings including the regular education classroom, other school environments, and the community (Hillary and Sam only). The observations were conducted across a four week period. For each occurrence of an inappropriate behavior, the observer identified the response by peers and staff who were present. Responses were described as one of three types: "attention," "interaction" (i.e. sustained attention), or "ignored." In addition the observer judged whether or not in this situation the behavior functioned primarily as an elicitor of social interaction, versus the expression of other intents such as protest of requesting tangibles.

Table 2 presents the excess behaviors displayed by each student, the number of occurrences of each behavior within the observation period, and the outcomes of the response analysis. Behaviors were identified as serving a social interaction function if occurrences of the behavior were followed at least 70% of the time by attention or interaction from peers or staff ***and*** the function of the behavior was perceived by the observer to be attention or interaction at least 80% of the time. This subset of behaviors is marked with asterisks on Table 2.

Insert Table 2 about here

Conversation Training Program

Communication books: The medium for conversation. Communication books were developed for each student that contained colored photographs of activities and people that the children liked very much. The pictures were labeled with short phrases identifying people or some aspect of the activity. The written phrases assisted the partner to interpret the picture and provided suggestions to both the partner and the students (Hillary and Sam could read the phrases) of things to say about the pictures. The photographs were housed in a 5" by 7" photograph album. The conversation books were carried by the students throughout the school day in sports pouches attached to shoulder straps or the waistbands of their pants. Photos were frequently exchanged with new pictures to keep students and their partners interested in the topics represented in the pictures.

The communication books served as the conversation medium. The students were taught to pair spoken words and phrases with a point to the relevant picture in the book (see Procedures, below). This strategy ensured that their questions, comments, and answers would be understood by their communication partner. The photographs also provided cues for comments to make and appropriate answers to questions. For a detailed discussion of conversation book adaptations, see Hunt et al. (1990).

Conversation turntaking: The structure of the conversation. During instructional sessions and "facilitated conversation opportunities," conversation turns were structured to promote equal participation and avoid domination by one partner. To facilitate balanced turntaking, both the students with disabilities and the nondisabled peers were taught to structure turntaking so that they first responded to their partner's message and then cued that person to respond again. The specific turntaking structure taught to the students with disabilities and their nondisabled

peer partners followed the model documented by Hunt et al. (1988; 1990; 1991; in press), as described in Figure 1.

Insert Figure 1 about here

This turntaking structure facilitated conversation by providing to both partners in the exchange a "within activity prompt" to take another turn: that is, the questions asked by the nondisabled peer partner was a highly salient cue for the student with disabilities to take another conversational turn. In addition, the peer partners were reminded to wait until the student not only answered their question, but also made a new comment on the same or a different topic or asked them a question. The additional comment or question made by the student with disabilities then served as a cue for the nondisabled partner to respond with a related comment(s) and then the prompting question.

During instructional sessions the students with disabilities were taught to initiate conversations by removing their conversation books from the pouches as they were greeting potential conversation partners.

Procedures

Design. A multiple baseline design across subjects (Hersen & Barlow, 1976; Kazdin, 1982) was used to evaluate performance during conversation training sessions and the 15-min probe sessions in the regular education classrooms.

Baseline. Four-min baseline sessions were conducted in the settings that would serve as contexts for the instruction of conversation turntaking. The student and conversation partner (the nondisabled student) sat together. The instructor sat next to the student and counted the number of conversational turns taken by the

student with disabilities; however, no instructional procedures were in effect and a communication book was not available.

Baseline sessions for the 15-min probes were implemented during "free time" periods in the regular education classroom that would serve as contexts for measurement of generalized increases in positive social interactions between the students with disabilities and their nondisabled classmates. During baseline probe sessions there was no pairing of students and potential communication partners, no instructional procedures were in effect, and no conversation book was available.

Conversation training. Conversation training sessions were 4-min long for Hillary and Sam. For Eddie, who was 6 years old, training sessions were shortened to 2 min to more closely match Eddie's attention span and the length of conversations between kindergarten-age children. The conversation partners were nondisabled peers who were not members of the students' regular education classroom. An individualized prompt-fade teaching strategy using some combination of physical, gestural, and verbal prompts to teach the use of the book and the turntaking structure was implemented by an instructor. There was a gradual decrease in the amount of assistance provided across the instructional sessions until the students were initiating and taking conversational turns independently throughout the training session (see Hunt et al., 1990 for a detailed description of instructional procedures).

Instructor prompts were withdrawn after a student responded successfully for several sessions with minimal assistance. At that point maintenance sessions were implemented at least two times per week to ensure that conversation skills remained at the level achieved during training sessions. During maintenance sessions, which were conducted approximately two times per week, only independent initiation and conversation turntaking were scored as correct responses. The instructor no longer prompted performance; however corrections

were provided for incorrect responses (e.g., taking only a partial turn) and no response (e.g., not answering the partner's question).

During the conversation training period, the 15-min probes of social interactions between the students with disabilities and their nondisabled classmates continued to be implemented; however, it was hypothesized that there would be minimal effect over baseline performance.

Establishing a communication support group. At the point at which the student with disabilities was demonstrating independent conversation initiation and turntaking throughout the 4-min (2 min for Eddie) instructional sessions, a conversation-partner training was presented to all members of the student's regular education classroom by three project staff members and the special education teacher. The purpose of the training was to provide the regular education classmates with the information and experience they needed to support the students with disabilities in a conversational exchange utilizing the conversation book adaptation. The following support strategies were taught to the students: a) make comments by referring to pictures in the communication book; b) cue the student with disabilities to take another conversational turn by asking him or her a question related to a picture in the book; and c) wait after the student answers the question to give him or her the opportunity to make additional comments or introduce a new topic. Oral instruction to the entire class was accompanied by small group demonstration and role play activity in which students had the opportunity to practice skills. The training, lasting approximately 30 min, continued until all nondisabled classmates in each group demonstrated to the trainers the ability to engage in a conversation utilizing the conversation book and the "turntaking structure."

Following the partner-training session educational staff systematically provided opportunities for all interested members of the class (i.e., they responded

to social initiations from the student with disabilities) to engage in conversations with the student with disabilities at least one time per week. When opportunities for conversational interaction occurred throughout the day (e.g., after lunch in the cafeteria, free time in the classroom, recess) and classmates were present, staff verbally reminded peers that they could talk with the target student if they wanted to do so. Staff provided further assistance only if breakdowns in communication occurred. These "facilitated conversation opportunities" ensured that the student with disabilities participated in a number of conversations each day with classmates. Hillary engaged in an average of 27 "facilitated conversations" per week with 77% of her classmates; Eddie engaged in an average of 20 "facilitated conversations" per week with 75% of his classmates; and Sam participated in an average of 23 "facilitated conversations" per week with 71% of his classmates.

After the classroom intervention and the implementation of "facilitated conversation opportunities," 15-min probes continued to be conducted in the regular education classroom. It was hypothesized that there would be an increase in positive social interactions between the student with disabilities and his or her nondisabled classmates following the establishment of the communication support group (i.e., students in the regular education class who received the in-class training and who participated regularly in "facilitated conversations").

Measurement

Conversation training sessions. The dependent variables assessed across baseline, training, and maintenance phases were the following: a) ***Initiation of a conversation***: Speaking one to several words in greeting that were understood by the communication partner and/or removing the communication book from its carrying pouch and touching a picture in the book to initiate conversation (measured only one time per session), and b) ***Conversation turntaking***: A

conversation turn was defined as a response within 4 sec to the partner's comment or question and then searching for a new picture to discuss or making a new comment or a question on any topic within 4 sec of their first response (the 4-sec rule was established to facilitate reliability measures by independent raters; comments made after the 4-sec criteria were rated as incomplete turns). A comment was a touch to a picture accompanied by a word or phrase. An answer was a comment that was relevant to the question asked. This criterion was included to ensure a meaningful exchange. If references to pictures were made without accompanying speech, the pointing response had to be maintained for 2 sec to eliminate random, meaningless pointing and to facilitate interpretation by the partner, although this seldom happened. To be accepted, questions or comments that were verbal and unaccompanied by references to pictures had to be understood by the partner (as indicated by the partner's response).

During baseline, training, and maintenance sessions, if the student initiated a conversation by greeting his or her partner or removing the communication book from the carrying pouch and making a verbal or picture-referenced comment, the instructor gave a (+) for initiation. A conversational turn was recorded by the instructor each time the student both ***responded*** to his or her partner's comment or question with a relevant comment and made an ***additional comment*** on the same or a new topic. (See "Conversation turntaking" above for a rationale for requiring this specific conversation structure.)

Probe sessions in the regular education classroom. The dependent variables related to interactions between the three students with disabilities and their nondisabled classmates were measured during "free periods" in the regular education classroom. The components of conversational turntaking assessed included the following: a) ***social comments*** (that is, they were unrelated to any ongoing activity) that were made by the student with disabilities to a classmate or

made by a classmate to the student, b) ***task-related comments*** initiated by the student or his or her classmate, c) ***targeted inappropriate social interaction behaviors*** displayed by the student with disabilities, and d) ***untargeted excess behaviors***. There was no adult facilitation of communicative interaction during these sessions, but the conversation books were available. During these "free periods" all students were allowed to engage in leisure activities of their choice, such as coloring, games, puzzles, etc.

Occurrence of targeted communicative and targeted and untargeted excess behaviors was determined using an interval recording procedure (see Kazdin, 1982). The 15-min session was divided into a series of 15-sec intervals, with 60 intervals occurring within the observational period. The relevant behaviors were scored as having occurred or not occurred during each of the intervals. If the behavior was ongoing (e.g., participating in a conversation), it was scored within each interval in which it was occurring. Types of excess behaviors were differentiated.

Reliability

An independent observer (first author, teacher, or university student) rated the performance of each student on 25% of the training sessions and an average of 44% (40% for Hillary, 45% for Eddie, and 46% for Sam) of the probe sessions. For the conversation training sessions comparisons were made between the ratings of the instructor and the observer on the number of conversation turns taken during the 4-min (2 min for Eddie) period and the presence or absence of student-initiated conversation. Point-by-point reliability was calculated by dividing the number of observer agreements by the total number of agreements plus disagreements times 100.

Using the same formula, point-by-point comparisons were also made between the ratings of the instructor and an independent observer on the percentage

of intervals during the 15-min probe sessions in which targeted communicative behaviors and targeted and untargeted inappropriate behaviors occurred. Additionally, an analysis was made of the degree to which the instructor and observer agreed on the ***type*** of inappropriate behavior displayed (e.g., hit, pushed, spit, made a silly comment).

Results

Reliability

Training sessions. Across the three students the mean percentage of interrater agreements on the presence or absence of a complete conversation turn at any point throughout instructional sessions was 93.9%. The mean agreements for Hillary, Eddie, and Sam were 95.4 (range: 89-100%), 93.7 (range: 80-100%), and 92.7% (range: 50-100%), respectively. There was 100% agreement across all three students on the presence or absence of initiation of conversation by the student with disabilities.

Probe sessions. The mean percentages of agreement on the occurrence of targeted communicative behaviors and targeted and untargeted inappropriate behaviors during each of sixty probe session intervals are presented in Table 3. Mean percentage of agreement within each category of response (i.e., classmate to student social and task-related comments, student to classmate social and task-related comments, and student-displayed inappropriate behaviors) ranged from 93.8 to 100 for the three students. The mean percentage of agreement across the three students on the ***type*** of inappropriate behavior displayed was 92%.

Insert Table 3 about here

Conversation Training Sessions

Baseline. Results for each of the three students during conversation training sessions are presented in Table 4. During the 4- min baseline sessions for Hillary and Sam, the average number of conversational turns taken was 0 and 1.5, respectively. Eddie took 0 turns during his 2-min baseline sessions. Hillary initiated conversation for 50% of baseline sessions and Sam for 67%. Eddie did not initiate a conversation for any baseline sessions.

Insert Table 4 about here

Training. During instructional sessions, in which teacher prompting was provided, the number of conversational turns taken increased. The average number of turns taken during 4-min sessions for Hillary and Sam was 10 and 10.5. Eddie took an average of 4.8 turns during 2-min training sessions. All three students initiated conversation for 100% of the training sessions.

Maintenance. When independent performance was required in instructional contexts, the number of turns taken by each of the students remained at a level consistent with performance during instructional sessions. Hillary and Sam took an average of 9.2 and 8.8 turns during 4-min sessions, and Eddie took an average of 4 turns during 2-min sessions. All three students initiated conversation for 100% of the maintenance sessions.

Probe Sessions

Baseline. Results for each of the three students during the 15-min probe sessions are shown in Figures 2, 3, and 4. Few social interactions between the students with disabilities and their classmates occurred during baseline sessions.

The average number of intervals in which social comments from Hillary, Eddie, and Sam to classmates occurred was 2, 1.25, and 2.33, respectively. The average number of intervals in which task-related comments occurred was 1 from Hillary, .6 from Eddie, and .33 from Sam (see Figure 2). Regular education classmates commented socially to Hillary, Eddie, and Sam during an average of 2.5, .25, and 2 intervals, respectively. They addressed task-related comments to Hillary during 1.5 intervals, to Eddie during 2 intervals, and to Sam during .83 intervals (see Figure 3).

Insert Figure 2 & 3 about here

Each of the three students displayed a number of aberrant behaviors during baseline sessions (see Figure 4). Hillary demonstrated target inappropriate behaviors during an average of 8.5 intervals during the 15-min period, and untargeted behaviors during 2.5 intervals. Eddie displayed targeted inappropriate behaviors during 5.25 intervals and untargeted behaviors during 3.25 intervals. Sam demonstrated aberrant behavior during an average of 6.17 intervals and untargeted aberrant behaviors during 5.50 intervals within the 15-min period.

Insert Figure 4 about here

Training period. During the period when students were receiving training on conversation skills in instructional settings with partners who were not classmates, there appeared to be no impact on the social interactions between the students with disabilities and their classmates in the regular classroom setting. The average number of intervals in which social comments from Hillary, Eddie, and

Sam were made to classmates was 1.67, .67, and 3, respectively. The average number of intervals of task-related comments from Hillary, Eddie, and Sam was 2, .33, and 1, respectively (See Figure 2). Regular education classmates commented socially to Hillary an average of .67 intervals, to Eddie an average of .33 intervals, and to Sam an average of 2 intervals. They addressed task-related comments to Hillary, to Eddie, and to Sam during 1.67, 1.33, and .5 intervals respectively (see Figure 3).

During the conversation training period there appeared to be minimal or no impact on the display of aberrant behaviors by the students with disabilities in the regular classroom settings during the 15-min probes (see Figure 4). Hillary demonstrated targeted inappropriate behaviors an average of 6.67 intervals and untargeted behaviors an average of 3 intervals. Eddie displayed targeted inappropriate behavior during 7 intervals and untargeted behaviors during 7 intervals. Sam demonstrated targeted behaviors an average of 5.50 intervals and untargeted excess behaviors an average of 4.75 intervals during the 15-min period.

Post classroom intervention (maintenance period for instructional sessions). Following the inservice to each of the three regular education classrooms and during the 3 -5 week implementation of "facilitated conversation opportunities" there was an increase in the intervals in which social interactions occurred between the students with disabilities and his or her regular education classmates during the 15-min probe sessions. There was no increase in the intervals in which task-related comments were initiated by students with disabilities or their classmates. The average number of intervals in which social comments were made by Hillary, Eddie, and Sam to classmates was 7.8, 5.50, and 41.33, respectively. The average number of intervals in which task-related comments were made was 1.60 from Hillary, .75 from Eddie, and 0 from Sam (see Figure 2). Regular education classmates commented socially to Hillary, Eddie, and Sam an average of 7.4, 4.75, and 36.67

intervals, respectively. Intervals in which they addressed task-related comments to Hillary was 1.20, .25 to Eddie, and 0 to Sam.

During the post-classroom-intervention phase, the intervals in which targeted inappropriate behaviors were displayed by the three students dropped significantly from both baseline and training period levels (see Figure 4). Hillary engaged in targeted inappropriate behaviors an average of .4 intervals during the post-intervention phase, with no behaviors occurring during the last 3 of the 5 sessions. Eddie did not display any targeted behaviors during the post-intervention phase. Sam demonstrated behaviors an average of .33 intervals across the 3 post-intervention sessions.

Additionally, there appeared to be some decrease in the number of intervals in which untargeted behaviors were demonstrated by each of the three students from levels in the previous phases, with Hillary, Eddie, and Sam displaying an average of 1, 3.5, and 2.67 untargeted behaviors, respectively. Table 5 presents the number of each type of targeted and untargeted inappropriate behavior that occurred during baseline and post-intervention phases.

Insert Table 5 about here

Discussion

Three students with moderate or severe intellectual disabilities, who were fully included members of regular education classrooms, were taught to initiate and maintain a conversation with nondisabled peers (who were not classmates) utilizing a communication book adaptation. During the baseline, conversation training, and conversation maintenance periods, probes were conducted in the three

participants' regular education classrooms to measure the frequency of social interactions between the students with disabilities and their nondisabled classmates. Additional measures were taken of the frequency of the occurrence of a set of inappropriate social interaction behaviors that the students with disabilities demonstrated in the presence of their nondisabled peers.

Probe data revealed that during the baseline and conversation training phases, few interactions were occurring in the regular education classroom during those "free time" periods in which measures were taken. In addition, the three students with disabilities were displaying a number of inappropriate behaviors that had been hypothesized to serve a social interaction function.

At the point at which the students with disabilities were demonstrating independent conversational turntaking with peers who were not classmates, presentations were made to all members of each student's regular education classroom. Through verbal instruction, demonstration, and role play activities, the students were given the information they needed to converse with their classmate with disabilities using the communication book as the medium for the exchange. Finally, educational staff provided opportunities for members of the class to engage in conversations with the student on a regular basis. Following the implementation of these procedures to establish a communication support group of regular education classmates, probe data revealed increases in positive social exchanges in the regular education classroom, which were particularly dramatic for one of the three students; moreover, increases in positive initiations were accompanied by decreases in the frequency of the occurrence of inappropriate social interaction behaviors that had been displayed by the students with disabilities in the regular classroom setting. Although the design does not allow a clear demonstration of causality, these results suggest a relationship between increases in

communication skill and decreases in functionally acquired inappropriate behaviors.

These results replicate earlier findings that children with severe communicative deficiencies can be taught to engage in extended conversations (Hunt et al., 1988; 1990; 1991) and that these outcomes may be accompanied by a generalized increase in related communicative behaviors that occur in integrated school settings (Hunt et al., 1990). Additionally, the inverse relationship that the data revealed between an increase in communicative behaviors and a decrease in inappropriate social interaction behaviors is consistent with the reciprocal relationship between aberrant behavior and functionally equivalent communicative responses documented by several investigators (e.g., Carr & Durand, 1985; Horner & Budd, 1985; Hunt et al., 1988, 1990).

During the post-intervention phase of the study, when there were increases in social comments between students with disabilities and their classmates, there was no accompanying increase in task-related comments between the students. This outcome was predicted because the pictures and phrases in the communication book were related to social topics, and conversational exchanges in training contexts or during "facilitated conversation opportunities" would promote only the expression of social comments.

There appeared to be some decrease in the ***untargeted*** excess behaviors displayed by each of the three students during the post-intervention phase. It can be speculated that some reduction might be related to the incompatibility (see Carr, Robinson, Taylor, & Carlson, 1990) of positive communicative behaviors and aggressive, protest, or self-stimulatory behaviors.

As students with severe disabilities are integrated more fully into regular classroom programs, the development and evaluation of strategies to support positive social exchanges between students and their nondisabled classmates

becomes a high priority area of research. This study provided one measure of the degree to which positive social interactions were occurring in the regular education classroom prior to systematic intervention; of course, the generalizability of this interaction profile is extremely restricted, but it suggests that interaction patterns occurring in regular education classrooms in which students with severe disabilities are full time members may be limited. The present study offers an intervention package that results in a classroom climate in which students with severe disabilities appear to become more competent communicators. If the concept of natural supports (Nisbet & Hagner, 1988) is to become a reality in classrooms as well as the workplace, such strategies are essential. Further research is now needed to expand the number of strategies that have been developed to support social interactions within inclusive classrooms, and that promote the development of social networks and friendships among all students.

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Table 1

Subject Characteristics

	Sex	CA	Arizona Articulation Proficiency Scale[a]	TACL[b]	Age Equivalent	EOWPVT[c]	Age Equivalent	MLU[d]
Hillary	F	12.2	79[e] (severe)	82	6.2	71	7.4	2.5 (1-6)
Eddie	M	6.9	63.5[e] (severe)	21	less than 3	34	3.4	1.7 (1-4)
Sam	M	9.8	73[e] (severe)	76	5.5	76	8.2	4.5 (1-9)

[a]Arizona Articulation Proficiency Scale (Fudala, 1970).
[b]Test for Auditory Comprehension of Language (Carrow, 1974).
[c]Expressive One Word Picture Vocabulary Test (Gardner, 1979).
[d]Mean Length of Utterance (in words).
[e]Speech is intelligible with careful listening.

Table 2
Analysis of the Response to the Display of Excess Behaviors

Student	Behavior	Observation time (hr)	No. of behaviors	Response analysis (% occurrences)	
				Actual response: Attention or interaction	Perceived primary function: Attention or interaction
Hillary	Self-stimulatory (puts objects in mouth, talks to self, rocks, taps objects)	7:50	38	15	0
	Off task (does not do assigned task, sits on floor, leaves desk)		17	41	0
	Inappropriate verbalizations including:				
	* Calls names		14	86	80
	"Bosses"		7	86	29
	Swears		7	86	29
	Raises voice		6	83	33
	* Makes crude or silly remarks		15	87	87
	*Inappropriate touch (pokes, tickles, pats, grabs, leans on, pinches, kisses, hits)		39	82	90
	*Inappropriate postures/ gestures		5	80	100
	*Mimics peer		3	100	100
	Aggresses including:				
	Pushes		3	100	0
	Hits		2	100	0
	Slams object		2	100	0
	Threatens		2	100	0
	Plugs ears & ignores		4	75	0
Eddie	Self-Stimulatory (hits self, rhythmic tapping, objects in mouth)	3:40	28	28.5	0
	*Yells		8	87.5	87.5
	Inappropriate touch including:				
	* Pinches, pushes, sits on		23	83	83
	Hits, kicks		9	100	22
	*Imitates dog		23	74	100
	*Puts self in center or leaves group		5	100	100
	*Throws objects		2	100	100
	Noncompliance (whines, cries, lays down, leaves)		8	87.5	37.5
Sam	Self-stimulatory (runs in circles, objects in mouth, talks to self, flaps hands, touches ears, makes noises, jumps up & down)	7:35	66	19.7	0
	Aggresses including:				
	Hits		14	100	43
	Kicks		2	100	50
	* Spits		8	88	100
	* Pushes		6	100	83
	* Verbal		2	100	100
	Inappropriate verbalizations including:				
	Calls names		13	92	46
	* Makes rude comments		4	100	100
	Bosses		4	25	100
	Yells		6	67	25
	Swears		4	75	75
	* Makes silly comments		15	73	100
	*Inappropriate touch (hugs, kisses, touches)		14	86.7	100
	Burps		7	57.7	100
	Makes noises		6	67	83

*Inappropriate social interaction behaviors

Table 3

Mean Percentages and Ranges for Reliability Checks in Probe Sessions

	Hillary	Eddie	Sam
Classmate (to student with disabilities)			
Cs	94.8 (87-100)	96.6 (88-100)	93.8 (83-100)
Ct	96 (90-100)	99 (98-100)	100
Student (to classmate)			
Cs	96 (88-100)	95 (92-100)	94.5 (83-100)
Ct	98.4 (95-100)	99.5 (98-100)	100
BÚ	97.2 (90-100)	95 (87-100)	97.5 (93-100)
BÆ	97.8 (92-100)	100	97 (90-100)

Cs = Social comments
Ct = Task-related comments
BÚ = Targeted inappropriate behaviors
BÆ = Untargeted inappropriate behaviors

Table 4

Mean Number of Conversational Turns Taken During Training Sessions

	Hillary	Eddie	Sam
Baseline			
$\bar{X}$ turns	0	0	1.5
# sessions	2	4	6
Training			
$\bar{X}$ turns	10	4.8	10.5
Range	8-12	3-7	6-13
# sessions	36	43	46
Maintenance			
$\bar{X}$ turns	9.20	4	8.8
Range	7-11	3-5	6-11
# sessions	12	8	5

Table 5

Inappropriate Behaviors: Baseline (Pre) and Post Intervention

Hillary	Pre *(2)	Post *(5)	Eddie	Pre *(4)	Post *(4)	Sam	Pre *(6)	Post *(3)
Targeted			Targeted			Targeted		
Inappropriate verbalizations (crude or silly comments, calls names)	8		Yells	7		Aggresses (spits, pushes, verbal)	2	1
Inappropriate touch	1	2	Inappropriate touch (pinches, sits on)	12		Inappropriate verbalizations (rude or silly comments)	29	
Inappropriate postures or gestures	7		Imitates dog			Inappropriate touch	6	
Mimics peers	1		Puts self in center or leaves group	2				
			Throws object					
Untargeted			Untargeted			Untargeted		
Self stimulatory			Self stimulatory	1	6	Self stimulatory	26	8
Off task	2	2	Inappropriate touch (hits, kicks)	2	8	Aggresses (hits, kicks)	4	
Inappropriate verbalizations (bosses, swears, raises voice)		3	Noncompliance/tantrums	10		Inappropriate verbalizations (calls names)	1	
Aggresses	3					Burps		
Plugs ears and ignores						Makes noises	2	

* *Number of probes per phase*

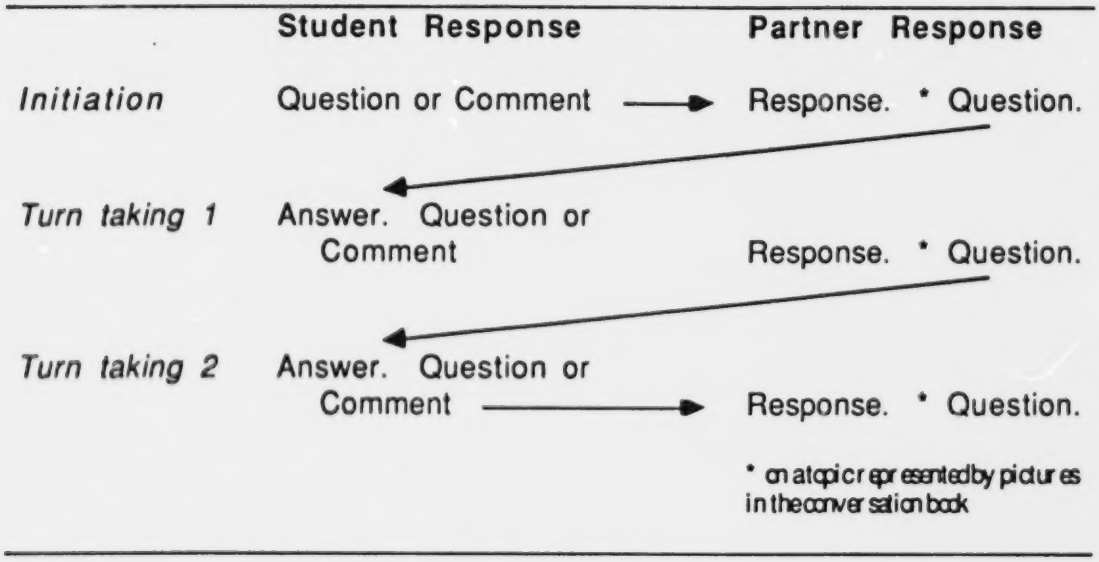
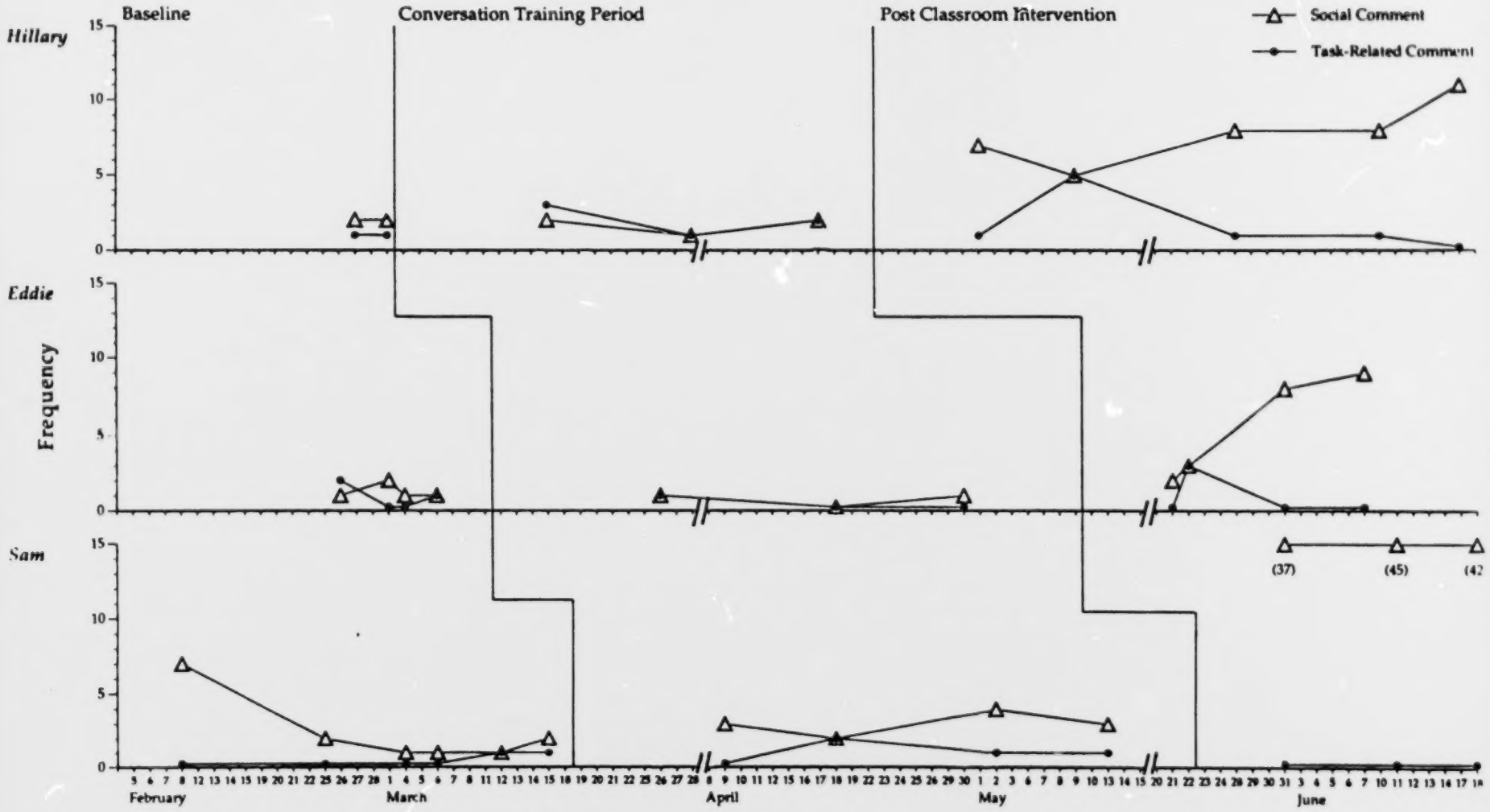


Figure 1; Conversation 5; Manuscripts 69/92



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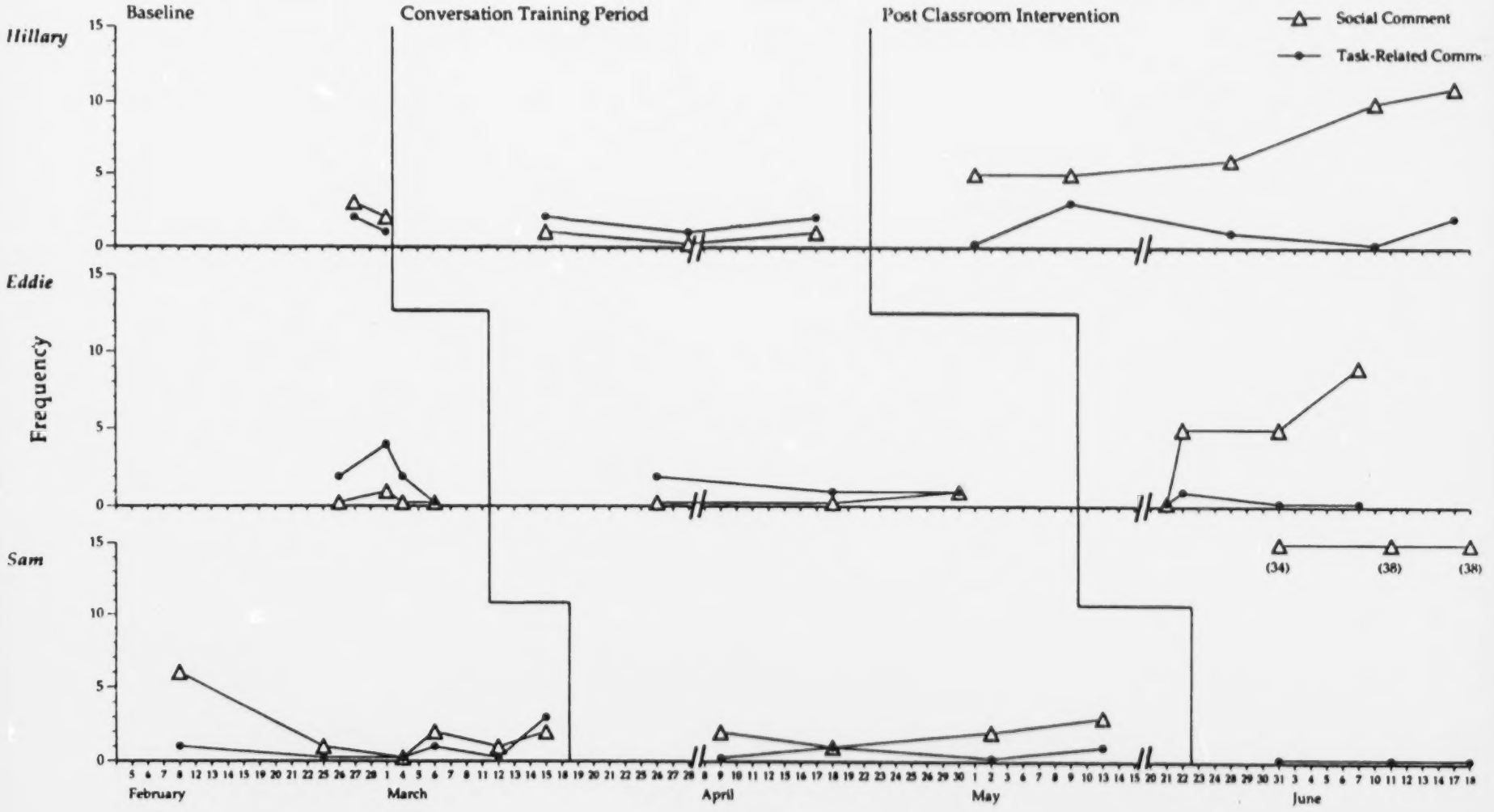

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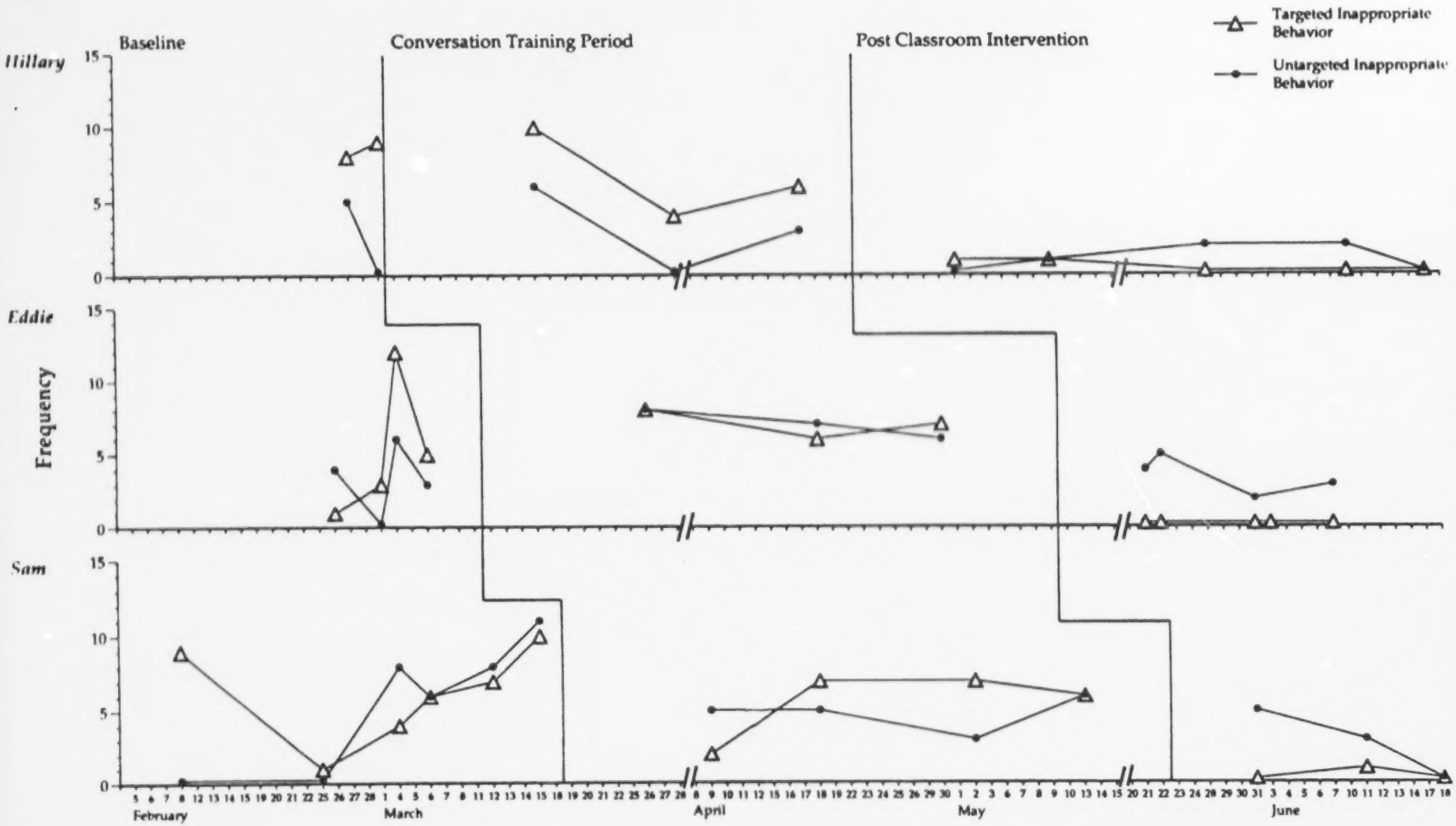

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